



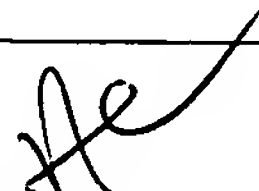
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/707,358	12/08/2003	Yu-Piao Wang	11417-US-PA	1357
31561	7590	11/30/2004	EXAMINER	
JIANQ CHYUN INTELLECTUAL PROPERTY OFFICE 7 FLOOR-1, NO. 100 ROOSEVELT ROAD, SECTION 2 TAIPEI, 100 TAIWAN			HU, SHOUXIANG	
			ART UNIT	PAPER NUMBER
			2811	

DATE MAILED: 11/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/707,358	WANG, YU-PIAO	
	Examiner	Art Unit	
Shouxiang Hu	2811		

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 20-27 is/are pending in the application.
- 4a) Of the above claim(s) 22-24 and 27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 20,21,25 and 26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>20040723</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Claims 22-24 and 27 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on September 13, 2004.

Applicant's election with traverse of claims 20, 21, 25 and 26 in the above reply is acknowledged. The traversal is on the ground(s) that what shown in Figs. 2A-2D and in Fig. 9 are from a same embodiment of the invention; and that claim 20 is generic to all other species. This is not found persuasive because what shown in Fig. 9 was not identified as one of the listed species in the restriction requirement set forth in the previous office action; and that structure/method of species of at least Figs. 1D, 2D, 3D, 4C, 5D, 6, 7D and 8 are apparently mutually distinctive, regardless whether claim 20 is generic to all of them. Nevertheless, it is noted that, upon the allowance of claim 20, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141.

The requirement is still deemed proper and is therefore made FINAL.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: --Semiconductor Device having a Lower Parasitic Capacitance--.

Claim Objections

3. Claims 20, 21, 25 and 26 are objected to because of the following informalities and/or defects:

In claim 20, it should be clarified that the first and second gate structures comprise respectively first and second pluralities of portions of the recited gate conductive layer, instead of each comprising the entire gate conductive layer.

Claim 20 recite the term of "between the first gate structures", but fails to clarify the recited "contact" is between two of the recited "first gate structure".

Regarding claim 20, it is further noted that the first gate structures as shown in Fig. 2D are not fully covered by the recited dielectric layer (118).

Regarding claim 21, it is noted that the cap layer (see 136a in Fig. 2D) is not fully and/or exactly located between the contact (120) and the gate conductive layer (134 and 132).

Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 20, 21 and 25, as being supported by the elected species and as being best understood in view of the claim objections above, are rejected under 35 U.S.C. 102(e) as being anticipated by Fujiwara (US 2003/0052353).

Fujiwara discloses a semiconductor device structure (Figs. 1-3; also see Paragraphs 0049, 0052 and 0056), comprising: a gate dielectric layer (8), a plurality of first gate structures (9n(WL), the two middle ones in the MCFA section) and a plurality of second gate structures (9n(WL), the two side ones in the MCFA section), each having a gate conductive layer 9n) with a cap and spacers (10 and 13, respectively; both silicon nitride); a self-aligned contact (20) disposed in a dielectric layer (16; SiO₂, which naturally has a lower dielectric constant than the silicon nitride spacers and cap therein); and, a conductive line (BL).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 26, as being supported by the elected species and as being best understood in view of the claim objections above, is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujiwara in view of claim Ligon (US 6,630,721).

The disclosure of Fujiwara is discussed as applied to claims 20, 21 and 25 above.

Although Fujiwara does not expressly disclose that a metal silicide can be formed on a sidewall of the gate conductive layer of the second gate structures, one of ordinary skill in the art would readily recognize that such a metal silicide can be desirably formed for reducing the gate resistance, as evidenced in Ligon (see the vertical portion of 54 in the cover page figure).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the side silicide of Ligon into the gate structures of Fujiwara, so that a semiconductor device with reduced gate resistance would be obtained.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References C-G are cited as being related to a gate structure.

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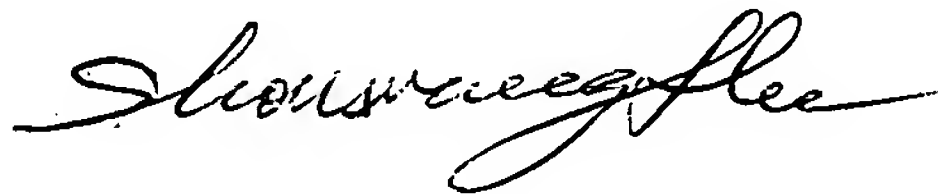
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shouxiang Hu whose telephone number is 571-272-1654. The examiner can normally be reached on Monday through Thursday, 7:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SH

November 22, 2004



**SHOUXIANG HU
PRIMARY EXAMINER**